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# Leprosy: New Diagnostic Perspectives

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Leprosy is an infectious chronic granulomatous disease, which affects the skin and peripheral nerves, with the possibility of developing peripheral neuropathy and consequent sensory and motor loss. The most likely transmission way is by upper airway through the interaction of susceptible people with patients infected with the contagious form. The incubation period ranges from 2 to 5 years[1]. *Mycobacterium leprae* is an acid-fast bacilli (AFB) and presents tropism for extremities[2].

Leprosy is diagnosed mainly on the basis of onset of clinical signs (skin and neurological lesions). These signs can be scarce at the beginning of the disease, leading to late and often misleading diagnosis. The use of anti-PGL-I serology and smear can help to diagnose patients with multibacillar (MB) leprosy, but these tests are not very sensitive to the paucibacillar (PB) forms. The lack of sensitivity of current laboratory methods for the early diagnosis of PB leprosy is an obstacle to the control of the disease[3].

Until recently, the development of tests for the diagnosis of leprosy has been hampered by the scarce supply of antigens, since *M. leprae* can not be cultured in axenic media. However, the decoding of the complete genome of *M. leprae*, with the advent of new tools of molecular biology and bioinformatics, have enabled the production of recombinant proteins of *M. leprae* and its evaluation as potential antigens for the diagnosis of leprosy[4].

Prior knowledge of the genome sequence of *M. leprae* has made possible the realization of DNA amplification method for identification of bacilli in clinical samples. Thus, the polymerase chain reaction technique (PCR) might be used as an alternative method of supporting the traditional methods of diagnosis. PCR is a highly specific and sensitive technique capable of detecting 25 fg ($10^{-15}$g) DNA from *M. leprae*. Furthermore, the possibility of their use in almost all types of clinical samples gives it a high potential method for the differential diagnosis[5].

The efforts of the World Health Organization to eliminate leprosy by the year 2000 were based on important advances in antimycobacterial therapy in the 1980s. Despite the large decline in prevalence observed in most endemic countries in the last decade, the detection of new cases remains high[6]. The development of diagnostic tests applicable in field situation is a priority in research, because the diagnosis of leprosy is mainly based on clinical manifestations and the lack of symptoms in early disease may contribute to errors in diagnosis or the under-diagnosis. It is desirable that the tests comprise humoral (antibody) or cellular (cytokines) parameters to the diagnosis of asymptomatic infection or to predict the progression of the disease among individuals at high risk of exposure[4].

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